

IN THE CLAIMS:

Please CANCEL claim 4 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claims 1, 10-14, 16, 18 and 19, as follows. For the Examiner's convenience, all claims currently pending in this application have been reproduced below:

1. (Currently Amended) An exposure apparatus for illuminating a reticle with exposing light from an exposing light source via an illuminating optical system and projecting a pattern, which has been formed on the reticle, onto a substrate via a projection optical system, said apparatus comprising:

a vessel within which one of the illumination optical system and the projection optical system is placed;

gas supplying means for supplying a desired gas to said vessel;

vacuum exhaust means for vacuum evacuating said vessel in order to establish negative pressure in the interior thereof from atmospheric pressure; and

control means for controlling a differential pressure between an internal pressure of said vessel and the atmospheric pressure so as not to exceed a differential pressure constant,

wherein said gas supplying means supplies the desired gas to said vessel after a pressure in said vessel is reached at a predetermined vacuum pressure by said vacuum exhaust means, and

said vacuum exhaust means is atmosphere-released if a concentration of gas in said vessel attains a predetermined concentration.

2. (Previously Presented) The apparatus according to claim 1, wherein the desired gas is one of an inert gas and a specific active gas.

3. (Previously Presented) The apparatus according to claim 1, wherein said vacuum exhaust means comprises a vacuum source for creating a vacuum in said vessel, and a vacuum-pressure controller for controlling pressure within said vessel, wherein said vacuum-pressure controller is provided in piping leading from said vessel to said vacuum source.

4-7. (Cancelled)

8. (Previously Presented) The apparatus according to claim 1, further comprising a display, a network interface and a computer for running network software,

wherein maintenance information relative to said exposure apparatus is capable of being communicated via a computer network.

9. (Previously Presented) The apparatus according to claim 8, wherein the network software provides said display with a user interface for accessing a maintenance database, which

is connected to an external network of a plant at which said exposure apparatus has been installed, and which is provided by a vendor or user of the exposure apparatus, thereby making it possible to obtain information from said database via said external network.

10. (Currently Amended) A method of manufacturing a semiconductor device, said method comprising the steps of:

placing a group of manufacturing equipment, including an exposure apparatus for performing various processes, in a plant for manufacturing semiconductor devices; and

manufacturing a semiconductor device by performing a plurality of processes using the group of manufacturing equipment,

wherein ~~said~~ the exposure apparatus includes:

a vessel within which one of an illuminating optical system and a projection optical system is placed;

gas supplying means for supplying a desired gas to ~~said~~ the vessel;

vacuum exhaust means for vacuum evacuating ~~said~~ the vessel in order to establish negative pressure in the interior thereof from atmospheric pressure; and

control means for controlling a differential pressure between an internal pressure of ~~said~~ the vessel and the atmospheric pressure so as not to exceed a differential pressure constant,

wherein the gas supplying means supplies the desired gas to the vessel after a pressure in the vessel is reached at a predetermined vacuum pressure by the vacuum exhaust means, and

the vacuum exhaust means is atmosphere-released if a concentration of gas in the vessel attains a predetermined concentration.

11. (Currently Amended) The method according to claim 10, further comprising:

interconnecting the group of manufacturing equipment by a local-area network;

and

communicating, by data communication, information relating to at least one piece of manufacturing equipment in ~~said~~ the group thereof between the local-area network and an external network outside ~~said~~ the plant.

12. (Currently Amended) The method according to claim 11, further comprising performing one of (i) obtaining maintenance information for ~~said~~ the manufacturing equipment by accessing, by data communication via the external network, a database provided by a vendor or user of ~~said~~ the exposure apparatus, and (ii) performing production management by data communication with a semiconductor manufacturing plant other than ~~said~~ the first-mentioned semiconductor manufacturing plant via the external network.

13. (Currently Amended) A semiconductor manufacturing plant, comprising:

- a group of manufacturing equipment, including an exposure apparatus, for performing various processes; and
- a gateway for making it possible to access, from a local-area network, an external network outside the plant, whereby information relating to at least one of the pieces of manufacturing equipment can be communicated by data communication,

wherein said exposure apparatus includes:

- a vessel within which one of an illumination optical system and a projection optical system is placed;
- gas supplying means for supplying a desired gas to said vessel;
- vacuum exhaust means for vacuum evacuating said vessel in order to establish negative pressure in the interior thereof from atmospheric pressure; and
- control means for controlling a differential pressure between an internal pressure of said vessel and the atmospheric pressure so as not to exceed a differential pressure constant,

wherein said gas supplying means supplies the desired gas to said vessel after a pressure in said vessel is reached at a predetermined vacuum pressure by said vacuum exhaust means, and

said vacuum exhaust means is atmosphere-released if a concentration of gas in said vessel attains a predetermined concentration.

14. (Currently Amended) A method of maintaining an exposure apparatus that has been installed in a semiconductor manufacturing plant, said method comprising the steps of:

providing a maintenance database, which is connected to an external network of the semiconductor manufacturing plant, by a vendor or user of the exposure apparatus;

allowing access to the maintenance database from within the semiconductor manufacturing plant via the external network; and

transmitting maintenance information, which is stored in the maintenance database, to the outside of the semiconductor manufacturing plant via the external network,

wherein ~~said~~ the exposure apparatus includes:

a vessel within which one of an illuminating optical system and a projection optical system is placed;

gas supplying means for supplying a desired gas to the vessel;

vacuum exhaust means for vacuum evacuating ~~said~~ the vessel in order to establish negative pressure in the interior thereof from atmospheric pressure; and

control means for controlling a differential pressure between an internal pressure of ~~said~~ the vessel and the atmospheric pressure so as not to exceed a differential pressure constant,

wherein the gas supplying means supplies the desired gas to the vessel after a pressure in the vessel is reached at a predetermined vacuum pressure by the vacuum exhaust means, and

the vacuum exhaust means is atmosphere-released if a concentration of gas in the vessel attains a predetermined concentration.

15. (Cancelled)

16. (Currently Amended) The apparatus according to claim 1, further comprising a pressure valve for preventing a differential pressure between the internal pressure of said vessel and the atmospheric pressure from exceeding ~~from~~ a predetermined value.

17. (Previously Presented) The apparatus according to claim 16, wherein said pressure valve is a valve for atmosphere-releasing to reduce the internal pressure of said vessel.

18. (Currently Amended) An exposure apparatus for illuminating a reticle with exposing light from an exposing light source via an illumination optical system and projecting a pattern, which has been formed on the reticle, onto a substrate via a projection optical system, said apparatus comprising:

a vessel within which one of the illuminating optical system and the projection optical system is placed; ~~and~~

gas supplying means for supplying a desired gas to said vessel; and

vacuum exhaust means for vacuum evacuating said vessel in order to establish a negative pressure in the interior thereof from atmospheric pressure,

wherein said vacuum exhaust means evacuates an internal pressure of said vessel to pulsate the internal pressure at a predetermined frequency in a range from negative pressure to atmospheric pressure.

19. (Currently Amended) An exposure method for illuminating a reticle with exposing light from an exposing light source via an illuminating optical system and projecting a pattern, which has been formed on the reticle, onto a substrate via a projection optical system, said method comprising:

a gas supplying step of supplying a desired gas to a vessel within which one of the illuminating optical system and the projection optical system is placed; and

a control step of controlling a differential pressure between the internal pressure of ~~said~~ the vessel and the atmosphere so as not to exceed a differential pressure constant when ~~said~~ the vessel is vacuum evacuated in order to establish a negative pressure in the interior thereof from atmospheric pressure,

wherein said gas supplying step supplies the desired gas to the vessel after a pressure in the vessel is reached at a predetermined vacuum pressure in said control step; and

atmosphere-releasing the vessel using vacuum exhaust means if a concentration of gas in the vessel attains a predetermined concentration.



20. (Previously Presented) An exposure method for illuminating a reticle with exposing light from an exposing light source via an illuminating optical system and projecting a pattern, which has been formed on the reticle, onto a substrate via a projection optical system, said method comprising:

a gas supplying step of supplying a desired gas to a vessel within which one of the illuminating optical system and the projection optical system is placed; and

an exhaust step of evacuating internal pressure of the vessel to pulsate the internal pressure at a predetermined frequency in a range from negative pressure to atmospheric pressure when the vessel is vacuum evacuated in order to establish a negative pressure in the interior thereof from atmospheric pressure.